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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/899,039

07/06/2001

Emmanuel Duret

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1364

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12/23/2004

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EXAMINER

FREJD, RUSSELL WARREN

ART UNIT

PAPER NUMBER

2128

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application N . 09/899,039	Applicant(s) DURET ET AL.	
	Examiner Russell Frejd	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 October 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-8 is/are rejected.
- 7) ☒ Claim(s) 4,5 and 9-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10.9.01</u> . | 6) <input type="checkbox"/> Other: _____  |

In re Application of: Dur t t al.

***Examination of Application #09/899,039***

1. Claims 1-14 of application 09/899,039, filed on 6-July-2001, are presented for examination.

***Claim Rejections under 35 U.S.C. § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering the objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 2, 3, 6, 7 and 8 are rejected under 35 U.S.C. 103 as being unpatentable over Hill et al. (hereinafter Hill), U.S. Patent No. 5,741,980.

4. Hill disclosed the invention as substantially as claimed, including a neural network used to determine the flow rate and other typical variables associated with single and two phase flows

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in a conduit [c. 27, l. 15-17] , including real time applications [c. 27, l. 29] of two phase water/air flows [c. 28, l. 51](see applicant's preamble);

a non-linear neural network [c. 27, l. 19], including an input layer for receiving known flow indicator quantities for a broad range of known conditions [c. 27, l. 35-46] (applicant's input layer);

an output layer for outputting results corresponding to the flow rates [c. 28, l. 7-8](applicant's output layer with flow mode estimation quantities);

a hidden layer [c. 27, l. 44](applicant's intermediate layer);

training the neural network by inputting known flow indicator quantities for a broad range of known conditions [c. 27, l. 36], and using a sigmoidal function called a "logistic" function for mapping any input value to an output [c. 27, l. 63-65](applicant's creating a learning base for connecting output data to corresponding input data); and

using a set of weighted connections to determine the links between the input layer and the output layer [c. 27, l. 51 through c. 28, l. 3](applicant's iterations of weighting factors for connecting vales between the inputs and outputs)[claims 1 and 6].

Hill does not specifically teach the pipe structure parameters of the present invention. However, Hill does disclose a neural network that does not require any assumptions about the form or the correlation between a set of inputs and the desired set of outputs [c. 27, l. 21-24]. For at least this reason, one of ordinary skill would have found it obvious to modify the neural network of Hill to include structure of the pipe among the input information because the neural network is a very fast and efficient way for providing reasonable estimates of operating

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conditions in real time applications [c. 27, l. 27-34], in this case, determining the flow rate and other typical variables associated with single and two phase flows in a conduit [c. 27, l. 15-17].

In regard to claims 2 and 7, filtering the raw data for obtaining the appropriate information to be input to the neural network for processing [c. 28, l. 43-50](applicant's sorting feature).

In regard to claims 3 and 8, a neural network having an input, connected to a hidden (intermediate) layer, which is connected to an output layer [c. 27, l. 41 through c. 28, l. 5] (applicant's totally connected network).

### ***Claim Objections***

5. Claims 4, 5 and 9-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response Guidelines***

6. A shortened statutory period for response to this action is set to expire **3 (three) months and 0 (zero) days** from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02, 710.02(b)).

7. **Any response to the Examiner in regard to this non-final action should be**

**directed to:** Russell Frejd, telephone number (571) 272-3779, Monday-Friday from 0530 to 1400 ET, or the examiner's supervisor, Jean Homere, telephone number (571) 272-3780.

**mailed to:** Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:** (703) 872-9306

Serial Number: 09/899,039

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*Hand-delivered responses should be brought to 220 South 20<sup>th</sup> Street, Crystal Plaza Two, Lobby, Room 1B03, Arlington. VA., 22202.*

Date: 13-December-2004

Russell FREJD

RUSSELL FREJD  
PRIMARY EXAMINER